

1. A connectionless communications system for converting a message assigned a destination address into one or more fixed-length packets, storing the destination address in a leading packet of the fixed-length packets, and transferring each of the fixed-length packets assigned a common message identifier, said system comprising:

rewriting means for rewriting said table according to the message identifier and destination address set in the leading packet;

switching means for switching the fixed-length packets according to the output information.

2. A switching system provided in a connectionless communications system for converting a message assigned a destination address into one or more packets, storing the destination address in a

5 address stored in the BOM packet upon receipt of the BOM packet and determining whether or not the destination of the message refers to a terminal unit accommodated in the switching system which has received the BOM packet;

15 the BOM packet in association with the routing
information;

20 continuation-of-message (COM) packet or an end-of-
message (EOM) packet in said one or more packets when
the COM packet or EOM packet is received;

25 retrieved by said routing information retrieving



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means;

5 a second table for storing information designating an output line group having one or more output lines for each switching system provided in said connectionless communications system;

10 output line determining means for determining an output line group by searching said second table according to the destination address stored in the BOM packet as a key when the destination of the message does not refer to the terminal unit accommodated in the switching system which has received the BOM packet;

15 a third table for storing the output line group determined by said output line determining means in association with the message identifier of the BOM packet; and

20 output means for retrieving output line group information from said third table according to a message identifier set in the COM packet or EOM packet in said one or more packets when the COM packet or EOM packet is received, and then outputting the COM packet or EOM packet to a predetermined output line which belongs to the output line group.

25 3. The switching system according to Claim 2, further

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a fourth table storing information for use in developing a group address;

a fifth table storing, in association with the message identifier of the BOM packet, group address development information retrieved from said fourth table according to a group address stored in the BOM packet when the destination address of a received BOM packet refers to the group address stored in said fourth table; and

means for retrieving the group address development information from the fifth table according to the message identifier set in the COM cell or EOM cell when the COM cell or EOM cell is received, and copying the COM packet or EOM packet according to the group address development information.

4. The switching system according to Claim 2, further comprising:

20 buffer means for storing an output packet; and
 read control means for controlling a read from
 said buffer means according to traffic amount for each
 output line in the output line group.

25 5. The switching system according to Claim 2, further

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The switching system comprising:

band altering means; an output line and altering means according to the traffic.

A connectionless system converting a message into one or more packets and destination addresses. Each packet of the system is assigned a connectionless system comprising:

a table storing addresses stored in the table; a value obtained by comparing the received BOM packet with the interface (SNI) number; and retrieving means for retrieving a value of the identifier of an error (BOM) or end-of-message when an error occurs.

8. The switching system according to Claim 2, further comprising:

band altering means for measuring traffic of each output line and altering a band of each output line according to the traffic.

9. A connectionless communications system for
10 converting a message assigned source and destination
addresses into one or more packets, storing the source
and destination addresses in a beginning-of-message
(BOM) packet of the packets, and transferring the
packets assigned a common message identifier, said
15 system comprising:

a table storing the source and destination addresses stored in the BOM packet using as a key a value obtained by combining the message identifier of a received BOM packet and a subscriber network interface (SNI) number;

retrieving means for searching the table using as a key a value of a combination of the message identifier of an error causing continuation-of-message (COM) or end-of-message (EOM) cell and an SNI number

25 when an error occurs in the COM or EOM packet; and

error information collecting means for collecting error information about the source and destination addresses of the message retrieved by said retrieving means.

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10. The connectionless communications system according to Claim 9, whereby

10 said error information collected by said error information collecting means is stored in the table using as a key a value obtained by combining the message identifier and the SNI number.

11. A connectionless communications system testing method for testing a predetermined path of a connectionless communications system having a plurality of switching stations, comprising the steps of:

15 issuing a request for a test on a path between predetermined switching stations from a subscriber terminal unit to a connectionless communications system; and

20 generating and outputting test data indicating that the data refers to test data through a predetermined path from a connectionless service network which has received the request.

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14. The connectionless communications system testing method according to Claim 11, wherein

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said test request specifies periodical transmission of the test data.

16. A connectionless communications system testing method followed by providing a communications module
25 S for accommodating a plurality of source subscribers

and analyzing a destination address of connectionless data transferred from the plurality of source subscribers and a communications module R for accommodating a plurality of destination subscribers, and having each permanent virtual circuit (PVC) connect between each of the source subscribers and the communications module S, between the communications module S and the communications module R, and between the communications module R and each of the destination subscribers, wherein

a fault report made by the source subscribers or destination subscribers is analyzed according to a predetermined algorithm to determine a faulty point.

17. A connectionless communications system testing method followed by providing a communications module S for accommodating a plurality of source subscribers and analyzing a destination address of connectionless data transferred from the plurality of source subscribers and a communications module R for accommodating a plurality of destination subscribers, and having a first permanent virtual circuit (PVC) connect between each of the source subscribers and the communications module S, a second PVC connect between the communications module S and the communications

module R, and a third PVC connect between the communications module R and each of the destination subscribers, wherein

test data generating means is provided in the communications module R and test data checking means is provided in the communications module S; and

said first or third PVC is tested by outputting the test data generated by said test data generating means to the first or third PVC, and receiving the test data at the test data checking means after being looped back by the source subscriber or destination subscriber.

18. The connectionless communications system testing method according to Claim 17, wherein

the source subscriber or destination subscriber determines, only when received data contains information indicating test data, whether or not the received data should be looped back according to an instruction from a connectionless communications system network.

19. The connectionless communications system testing method according to Claim 17, wherein

said source or destination subscriber determines

to a test-object PVC in a multiplexing process.

23. The connectionless communications system testing method according to Claim 17, wherein

5 said test data checking means recognizes test data for a predetermined PVC.

24. The connectionless communications system testing method according to Claim 17, wherein

10 a test is conducted on a test data transferring PVC and communications module S by inputting the test data received by the communications module S to said test data checking means after a process in the communications module S.

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25. A connectionless communications system testing method followed by providing a communications module S for accommodating a plurality of source subscribers and analyzing a destination address of connectionless data transferred from the plurality of source subscribers and a communications module R for accommodating a plurality of destination subscribers, and having a first permanent virtual circuit (PVC) connect between each of the source subscribers and the
20 communications module S, a second PVC connect between
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5 test data generating means is provided in the
communications module S and test data checking means
is provided in the connectionless communications
module R; and

26. The connectionless communications system testing
15 method according to Claim 25, wherein

27. The connectionless communications system testing
method according to Claim 26, wherein

said test data is inserted at an idle timing of the normal data when the test data generated by said test data generating means and normal data are multiplexed.

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28. The connectionless communications system testing method according to Claim 26, wherein

data is prohibited from being transmitted from a source subscriber connected to a non-test-object PVC to a test-object PVC in a multiplexing process.

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29. The connectionless communications system testing method according to Claim 25, wherein

said test data checking means recognizes test data for a predetermined PVC.

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30. The connectionless communications system testing method according to Claim 25, wherein

a test is conducted on the second PVC and communications module R by inputting the test data received by the communications module R to said test data checking means after a process in the communications module R.

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25 31. A connectionless communications system testing

method followed by providing a communications module S for accommodating a plurality of source subscribers and analyzing a destination address of connectionless data transferred from the plurality of source subscribers and a communications module R for accommodating a plurality of destination subscribers, and having a first permanent virtual circuit (PVC) connect between each of the source subscribers and the communications module S, a second PVC connect between the communications module S and the communications module R, and a third PVC connect between the communications module R and each of the destination subscribers, wherein

test data generating means and test data checking means are provided in the communications module R; and a test is conducted on the communications module R by multiplexing the test data generated by said test data generating means and normal data, processing the test data in the communications module R, and receiving the test data at said test data checking means.

32. A connectionless communications system testing method followed by providing a communications module S for accommodating a plurality of source subscribers

and analyzing a destination address of connectionless data transferred from the plurality of source subscribers and a communications module R for accommodating a plurality of destination subscribers, and having a first permanent virtual circuit (PVC) connect between each of the source subscribers and the communications module S, a second PVC connect between the communications module S and the communications module R, and a third PVC connect between the communications module R and each of the destination subscribers, wherein

test data generating means and test data checking means are provided in the communications module S; and

a test is conducted on the communications module S by multiplexing the test data generated by said test data generating means and normal data, processing the test data in the communications module R, and receiving the test data at said test data checking means.

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33. A connectionless communications system for converting a message into one or more packets, storing a data structure of the message in a beginning-of-message (BOM) packet in said one or more packets, and transferring the packets assigned a common message

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5 first subtracting means for subtracting a first value from a count value stored in said counter means;

second subtracting means for subtracting a second value from the count value recorded by said counter means using as a key a value obtained by combining a message identifier set in a continuation-of-message (COM) packet and the SNI number when the COM packet is received in said one or more packets;

10 third subtracting means for subtracting a third value from the count value recorded by said counter means using as a key a value obtained by combining a message identifier set in an end-of-message (EOM) packet and the SNI number when the EOM packet is received in said one or more packets; and

15 determining means for determining whether or not the message has been correctly transferred by comparing the count value stored in said counter means with a payload length of the EOM packet.

35. A connectionless communications system for
25 converting a message having an equal value for a

leading tag and a trailing tag into one or more packets, storing the leading tag in a beginning-of-message (BOM) packet and the trailing tag in an end-of-message (EOM) packet, and transferring the packets assigned a common message identifier, comprising:

storage means for storing the leading tag stored in the BOM packet using as a key a value obtained by combining the message identifier set in the BOM packet and a subscriber network interface (SNI); and

determining means for determining whether or not the message has been correctly transferred by retrieving the leading tag from said storage means using as a key the value obtained by combining the message identifier set in the EOM packet and the SNI number and by comparing the leading tag with the trailing tag stored in the EOM packet.

36. A connectionless communications system having first and second connectionless communications servers respectively for first and second switches for switching fixed-length packets to transmit data between subscribers accommodated in the first and second switches over connectionless communications, and to establish communications by transferring data through permanent virtual circuits (PVC) connecting

between each subscriber and the first and second connectionless communications servers, whereby

5 data is transferred through a private line provided between the first and second connectionless communications servers when said first and second connectionless communications servers are connected via the private line and when the data is transferred over the connectionless communications from a subscriber accommodated in the first switch to a
10 subscriber accommodated in the second switch.

37. The connectionless communications system according to Claim 36, wherein

15 said data is transferred by a fixed time slot assigning method through the private line connecting the connectionless communications servers.

38. The connectionless communications system according to Claim 36, wherein

20 said data is transferred by a variable time slot random assigning method through the private line connecting the connectionless communications servers.

39. The connectionless communications system according to Claim 36, wherein

25 said data is transferred by a variable time slot control assigning method through the private line

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41. ~~An intra-station control device for controlling~~
communications of control information between a
control processor for controlling operations of an
exchange station and an intra-station device in the
exchange station, comprising at the control processor
and the intra-station device:

10 intra-station control communications means for
communicating the control information according to a
data format of a ~~link~~ access protocol.

42. The intra-station control device according to
15 Claim 41, wherein

20 said intra-station control communications means
converts the data format of the control information
between the data format of the link access protocol
and the data format processed by the exchange station:
and

1/ said control information is communicated through
the exchange station.

43. The intra-station control device according to Claim 42, wherein

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said intra-station control communications means converts the data format of the control information into the data format processed by the exchange station, adds to the control information such routing information as can be identified by the exchange station and routed by said intra-station control communications means at a receiving equipment, and transmits the information to the exchange station.

10 44. The intra-station control device according to Claim 43, wherein,

said intra-station device comprises identifying means for identifying whether received data is subscriber data or the control information; and

15 said intra-station device transmits the data after adding routing information, when said identifying means has received the subscribed data, to received subscriber data to be routed to a destination, and after adding the routing information, when said
20 identifying means has received the control information, to received control information to be routed to said intra-station control communications means at a receiving equipment.

25 45. An intra-station ~~B~~ control device for controlling

transfer of a control information cell communicated between a terminal unit and a control device in an exchange station for switching cells, comprising:

5 direct memory ^Baccess means for directly writing to or reading from a storage device in the exchange station, control information stored in a control information cell communicated between the terminal unit and the control device in the exchange station.

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46. The intra-station control device according to Claim 45, wherein

 said control information cell contains a command code and address data to be processed by said direct memory access means.

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47. The intra-station control device according to Claim 45, wherein

20 said control information cell is assigned routing information to allow a switch in the exchange station to be identified and route the control information cell through a path accommodating said direct memory access means or the terminal unit.

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48. The intra-station control device according to Claim 45, wherein

output of said direct memory access means is connected to an multiplexing circuit connected to an input highway of the exchange station.

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49. An intra-station control device for testing an exchange station, comprising:

testing means for conducting a test on an exchange station according to a test program executed by a control device in the exchange station; and

loopback means for looping back test data transmitted through a highway in the exchange station according to the test program.

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50. The intra-station control device according to Claim 49, wherein

said control device checks for a fault a device connected to the control device according to the test program.

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51. An intra-station control device for testing an exchange station for switching cells, comprising in the exchange station:

software executing means for executing software for sending, looping back, and receiving a test cell.

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test cell inserting/extracting means for
5 conducting an inter-station loopback test in a switch
network by directly inserting the test cell generated
by the software executed by said software executing
means into an inter-station connection device for
switching data between stations in a switch network
10 containing the exchange station, or by directly
extracting the test cell from the inter-station
connection device.

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20 said test cell stores information specifying
forward and backward paths of the test cell, and
 said software executed by said software executing
means conducts an inter-station loopback test in the
switching network according to the information
specifying the forward and backward paths of the test
cell.

54. The intra-station control device according to
25 Claim ~~52~~, wherein

said test cell stores information specifying source and destination station telephone numbers of the test cell, and

5 said software executed by said software executing means conducts an inter-station loopback test in the switching network according to the information specifying the source and destination station telephone numbers of the test cell.

10 55. The intra-station control device according to any of Claim 51, wherein

15 said software executed by said software executing means at a destination station displays confirmation during a loopback test by notifying through an autonomous message a maintainer that the test cell has arrived.

20 56. An intra-station control device comprising in a switching device for switching cells:

 cell counting means for counting a number of cells passing through a switch of the switching device.

25 57. The intra-station control device according to Claim 56, wherein

 said cell count means counts a number of cells

passing through the switch for each priority level specified for a cell passing through the switch.

58. The intra-station control device according to Claim 56, wherein

5 said switch for which said cell count means counts the cells is a demultiplexer.

59. An intra-station control method for controlling a trailer in a physical layer convergence protocol (PLCP) interfaced to a digital signal level 3 format (DS3 format), comprising the steps of:

10 controlling a PLCP multiframe having a pattern in which a trailer changes in 3-frame cycle, and a first PLCP multiframe trailer is 13 nibbles, a second PLCP multiframe trailer is 14 nibbles, and a third PLCP multiframe trailer is 13 or 14 nibbles by changing a trailer length of a third PLCP multiframe in a fixed cycle of N times 85 patterns (N is an integer equal to or larger than 1) in order to transmit the PLCP multiframe such that, in the fixed cycle, the pattern in which the trailer of the third PLCP multiframe is 13 nibbles is repeated 29 x N times, and the pattern in which the trailer of the third PLCP multiframe is 14 nibbles is repeated 56 x N times.

controlling a PLCP multiframe having a pattern in which a trailer changes in 3-frame cycle, and a first PLCP multiframe trailer is 13 nibbles, a second PLCP multiframe trailer is 14 nibbles, and a third PLCP multiframe trailer is 13 or 14 nibbles by changing a trailer length of a third PLCP multiframe in the pattern in a fixed cycle of 85 patterns in order to configure fixed 85 cycles by one pattern repeating 28 times a subset of a total of 3 patterns, that is, one pattern of 13 nibbles of the trailer of the third PLCP multiframe, and two patterns of 14 nibbles of the trailer of the third PLCP multiframe, and one pattern in which the trailer of the third PLCP multiframe trailer is 13 nibbles.

20 61. A switching system provided in a network for autonomously routing a cell containing data and data control information according to the control information to provide a point-to-multipoint connection service, wherein

25 said point-to-multipoint connection is made using

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point-to-point map input

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said point-to-multipoint connection is made using a small bit map by decoding routing information set in the control information and sequentially updating bit map information.

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first converting means, provided at an input terminal of said switch, for converting routing information set in the control information of an input cell into intra-switch routing information; and

5 second converting means, provided at an output terminal of said switch, for converting the intra-switch routing information into routing information for an output cell.

10 67. The switching system according to Claim 66, wherein

 said first converting means sets the intra-switch routing information based on a number of paths connectable simultaneously.

15 68. A switching system provided in a network for autonomously routing a cell containing data and data control information according to the control information to provide a point-to-multipoint
20 connection service, comprising:

 setting means for setting point-to-multipoint control information in response to the control information of an input cell;

 transferring means for transferring in parallel
25 the cell and the point-to-multipoint control

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69. A multicast system for providing a multicast connection service in a broadband switching network, wherein

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71. A multiple subscriber communications connecting system provided in a network for autonomously transferring data through a virtual communications

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system provided in a network for autonomously transferring data through a virtual communications line, comprising when a first subscriber and a second subscriber are communicating in two-subscriber communications and a third subscriber issues a connection request to a first subscriber:

means for setting the second subscriber in a disconnection or standby state;

means for transferring data between the first subscriber and the third subscriber by connecting between the third subscriber and a multiple-subscriber communications processing device using information identifying a virtual communications line between the third subscriber and the multiple-subscriber communications processing device; and

means for transferring data between the first subscriber and the second subscriber when the second subscriber is set in a standby state and when communications has ended between the first subscriber and the third subscriber.

74. A multiple-subscriber communications connecting system provided in a network for autonomously transferring data through a virtual communications line, comprising after a first subscriber and a second

means for setting the first subscriber in a
5 standby state; and

75. A multiple-subscriber communications connecting
system provided in a network for autonomously
transferring data through a virtual communications
20 line and realizing a point-to-multipoint connection,
comprising:

means for connecting between an information
providing subscriber and a multiple-subscriber
communications processing device according to
25 information identifying a virtual communications line

5 means for connecting between a plurality of
information receiving subscribers who receive the
information from the information providing subscriber
and the multiple-subscriber communications processing
device according to information identifying each
10 virtual communications line between the plurality of
information receiving subscribers and the multiple-
subscriber communications processing device.

first storage means for storing a relationship
between a line used by a subscriber and the intra-
station device for processing the line;

line detecting means for detecting the line
processed by a predetermined intra-station device by
accessing said first storage means when connection
switch conditions are satisfied for the line processed
by the predetermined intra-station device;

line connection control means for disconnecting the line detected by said line detecting means from the predetermined intra-station device, then detecting another intra-station device which can accommodate a detected line, reconnecting the detected line to a detected intra-station device, and updating contents stored in said first storage means.

77. The intra-station control device according to Claim 76, wherein

satisfying the connection switch conditions for a line processed by the predetermined intra-station device refers to detecting a failure on the predetermined intra-station device.

78. The intra-station control device according to Claim 76, wherein

satisfying the connection switch conditions for the line processed by the predetermined intra-station device refers to issuing a request command to switch a connection of a line processed by the predetermined intra-station device.

79. An intra-station control device for controlling a connection state of a line in an intra-station

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81. An intra-station control device for controlling a line connection state of an exchange station or a

line between an exchange station and a remote concentrator, comprising:

band comparing means for comparing, when a failure is detected on the line, a value of a faulty band on the line on which the failure has been detected with
5 a sum of idle bands on the line on which no failures are detected; and

reassigning means for reassigning an idle band on a non-faulty line for the faulty band on the line on which the failure is detected when a value of the
10 faulty band on the line on which the failure is detected is equal to or smaller than idle bands on the line on which no failures are detected as a comparison result by said band comparing means.

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82. The intra-station control device according to Claim 81 further comprising:

first buffer means for buffering information communicated using the faulty band while said
20 reassigning means is reassigning the idle band on the non-faulty line for the faulty band on the faulty line.

83. The intra-station control device according to
25 Claim 81 further comprising:

line switching means for switching the faulty line to a spare line when a value of the faulty band on the line on which the failure is detected is larger than idle bands on the line on which no failures are detected as a comparison result by said band comparing means.

84. The intra-station control device according to Claim 83 further comprising:

10 second buffering means for buffering the information communicated using the faulty line while said line switching means is switching from the faulty line to the spare line.

15 85. The intra-station control device according to Claim 83, wherein

said reassigning means reassigns the idle band on the non-faulty line for the faulty bands on the faulty lines in order of priority level starting with a band through which information assigned a highest priority information is communicated.

86. The intra-station control device according to Claim 82, wherein

25 said reassigning means reassigns the idle band on

the non-faulty line for the faulty bands on the faulty lines in order of priority level starting with a band in which a service of a highest priority information is assigned.

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87. An intra-station control device for controlling a connection state of a path for a first exchange station, which autonomously exchanges cells of fixed length of data containing a path identifier identifying the path, and a second exchange station connected to the first exchange station, comprising:

10 first path control information storage means, provided in the first exchange station, for storing an output path identifier indicating a path on a relay route from the first exchange station to the second exchange station corresponding to each of input path identifiers added to a first cell input to the first exchange station through a path on an input route toward the second exchange station and route information for autonomously routing the first cell in the first exchange station ;

20 first path control means, provided in the first exchange station, for converting the input path identifier added to the first cell into a corresponding output path identifier by referring to

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second path control information storage means, provided in the second exchange station, for storing the output path identifier indicating a path on an output route output from the second exchange station corresponding to each of the input path identifiers added to a second cell input through a path on the relay route and the route information for autonomously routing the second cell in the second exchange station;

second path control means, provided in the second exchange station, for converting the input path identifier added to the second cell into a corresponding output path identifier by referring to said second path control information storage means and for adding the route information to the second cell;

path connection control means for determining a path on a normal relay route and a path on a spare relay route for connecting between a path on a predetermined input route and a path on a predetermined output route, writing to said first path control information storage means the output path identifier indicating the path on the normal relay route corresponding to the input path identifier

corresponding to the path on the predetermined input route and the route information for routing to the normal relay route, writing to said second path control information storage means the output path identifier indicating the path on the predetermined output route corresponding to the input path identifier corresponding to the path on the normal relay route and the route information for routing to the predetermined output route, and writing the output path identifier indicating the path on the predetermined output route corresponding to the input path identifier corresponding to the path on the spare relay route and the route information indicating the routing to the predetermined output route; and

path reassignment control means for converting, when a failure is detected on the path connecting the path on the predetermined input route and the path on the predetermined output route, the output path identifier indicating the path on the normal relay route stored in said first path control information storage means corresponding to an input path identifier corresponding to the path on the predetermined input route and the route information for routing to the normal relay route into the output path identifier indicating the path on the spare relay

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second path control information storage means, provided in the second exchange station, for storing the output path identifier indicating a path on an output route output from the second exchange station corresponding to each of the input path identifiers added to a second cell input through a path on the relay route and the route information for autonomously routing the second cell in the second exchange station;

second path control means, provided in the second exchange station, for converting the input path identifier added to the second cell into a corresponding output path identifier by referring to said second path control information storage means and for adding the route information to the second cell;

path connection control means for determining a path on a normal relay route and a path on a spare relay route for connecting between a path on a predetermined input route and a path on a predetermined output route, writing to said first path control information storage means normal path control information containing the output path identifier indicating the path on the normal relay route corresponding to the input path identifier corresponding to the path on the predetermined input

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route and the route information for routing to the normal relay route, spare path control information containing the output path identifier indicating the path on the spare relay route and the route information for routing to the spare relay route, and selection information for use in having said first path controlling means select the normal path control information, writing to said second path control information storage means the output path identifier indicating the path on the predetermined output route corresponding to the input path identifier corresponding to the path on the normal relay route and the route information for routing to the predetermined output route, and writing the output path identifier indicating the path on the predetermined output route corresponding to the input path identifier corresponding to the path on the spare relay route and the route information indicating the routing to the predetermined output route; and

path reassignment control means for converting, when a failure is detected on the path connecting the path on the predetermined input route and the path on the predetermined output route, the selection information for having said first path control means select the normal path control information stored in

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5 second path control information storage means,
provided in the second exchange station, for storing
the output path identifier indicating a path on an
output route output from the second exchange station
corresponding to each of the input path identifiers
10 added to a second cell input through a path on a
normal relay route and the route information for
autonomously routing the second cell in the second
exchange station;

second path control means, provided in the second
15 exchange station, for converting the input path
identifier added to the second cell into a
corresponding output path identifier by referring to
said second path control information storage means and
for adding the route information to the second cell;

third path control information storage means, provided in the second exchange station, for storing the output path identifier indicating a path on an output route output from the second exchange station corresponding to each of the input path identifiers added to a third cell input through a path on a spare

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path reassignment control means for converting, when a failure is detected on the path connecting the path on the predetermined input route and the path on the predetermined output route, only the route information for routing to the normal relay route into the route information for routing to the spare relay route without converting the output path identifier indicating the path on the normal relay route stored in said first path control information storage means corresponding to the input path identifier corresponding to the path on the predetermined input route, and copying to said third path control information storage means the output path identifier indicating the path on the predetermined output route stored in said second path control information storage means corresponding to the input path identifier corresponding to the path on the normal relay route and the route information for routing to the predetermined output route such that the output path identifier and the route information can be stored corresponding to the input path identifier corresponding to the path on the normal relay route in said third path control information storage means.

90. An intra-station control device for controlling

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control information storage means the output path identifier indicating the path on the normal relay route corresponding to the input path identifier corresponding to the path on the predetermined input route and the route information for routing to the normal relay route, and writing to said second path control information storage means the output path identifier indicating the path on the predetermined output route corresponding to the input path identifier corresponding to the path on the normal relay route and the route information for routing to the predetermined output route; and

path reassignment control means for converting, when a failure is detected on the path connecting the path on the predetermined input route and the path on the predetermined output route, only the route information for routing to the normal relay route into the route information for routing to the spare relay route without converting the output path identifier indicating the path on the normal relay route stored in said first path control information storage means corresponding to the input path identifier corresponding to the path on the predetermined input route, and copying to said third path control information storage means the output path identifier

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timing of the inter-system transfer controlled by said
timing control means.

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